10/730642

Freeform Search

Database: US Pre-Grant Publication Full-Text Database; US Patents Full-Text Database; US OCR Full-Text Database; EPO Abstracts Database; JPO Abstracts Database; Derwent World Patents Index; IBM Technical Disclosure Bulletins

Term: L5 and (predict$ with destinat$).clm.

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Search History

DATE: Wednesday, December 28, 2005 Printable Copy Create Case

Set Name side by side	Query	Hit Count	Set Name result set
DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; THES=ASSIGNEE; PLUR=YES; OP=OR			
L7	L5 and (predict$ with destinat$).clm.	2	L7
L6	L5 and (predict$ with destinat$)	10	L6
L5	L4 and 701/207-209.ccls.	496	L5
L4	L3 or l2	37596	L4
L3	L1 and @pd<=20031208	27734	L3
L2	L1 and @ad<=20031208	37413	L2
L1	(pattern$ or profil$) and map$ and route	44279	L1

END OF SEARCH HISTORY

L7: Entry 2 of 2 File: USPT Oct 19, 2004

US-PAT-NO: 6807483
DOCUMENT-IDENTIFIER: US 6807483 B1

TITLE: Method and system for prediction-based distributed navigation

DATE-ISSUED: October 19, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Chao; Yi-Chung	Fremont	CA		
Jin; HaiPing	San Jose	CA		
Dai; DongHai	Fremont	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Televigation, Inc.	Sunnyvale	CA			02

APPL-NO: 10/408325 [PALM]
DATE FILED: April 8, 2003

PARENT-CASE:
CROSS-REFERENCE TO RELATED APPLICATIONS This application relates to issued U.S. Pat. No. 6,266,615 entitled "Method And System For An Interactive And Real-Time Distributed Navigation System" by HaiPing Jin, issued on Jul. 24, 2001, herein incorporated in its entirety by reference. RELATED APPLICATION This application claims priority to U.S. provisional application Ser. No. 60/417,956 entitled "Prediction-based Positioning, Routing and Rerouting" filed Oct. 11, 2002.

INT-CL-ISSUED: [07] G01 C 21/00

US-CL-ISSUED: 701/210; 701/201, 701/209, 340/995.12, 340/995.23
US-CL-CURRENT: 701/210; 340/995.12, 340/995.23, 701/201, 701/209

FIELD-OF-CLASSIFICATION-SEARCH: 701/201, 701/202, 701/207, 701/208, 701/209, 701/210, 701/211, 701/214, 340/991, 340/993, 340/995.12, 340/995.16, 340/995.17, 340/995.19, 340/995.25, 340/995.23, 340/995.27
See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
☐	5902350	May 1999	Tamai et al.	
☐	5904728	May 1999	Tamai et al.	
☐	5910177	June 1999	Zuber	
☐	5912635	June 1999	Oshizawa et al.	
☐	5922042	July 1999	Sekine et al.	
☐	5928307	July 1999	Oshizawa et al.	
☐	5938720	August 1999	Tamai	
☐	6073075	June 2000	Kondou et al.	701/203
☐	6266615	July 2001	Jin	
☐	6418374	July 2002	Sakamoto et al.	701/209

ART-UNIT: 3661

PRIMARY-EXAMINER: Nguyen; Tan Q.

ATTY-AGENT-FIRM: Hu; Irene Y.

ABSTRACT:

Method and system for prediction-based navigation in a real-time distributed navigation system. In one embodiment, a server receives a request from a client comprising one or more position coordinates. The server estimates the user's speed, estimates total elapsed time, calculates an optimal route to the destination and sends a set of routing directions to the client. Moreover, the server estimates a route origin within an estimated comfort zone in order to calculate the optimal route from the estimated origin to the destination.

38 Claims, 6 Drawing figures

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L7: Entry 2 of 2 File: USPT Oct 19, 2004

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TITLE: Method and system for prediction-based distributed navigation

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INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Chao; Yi-Chung	Fremont	CA		
Jin; HaiPing	San Jose	CA		
Dai; DongHai	Fremont	CA		

US-CL-CURRENT: 701/210; 340/995.12, 340/995.23, 701/201, 701/209

CLAIMS:

We claim:

1. A prediction-based navigation method in a distributed system comprising a client and a remote server, wherein the steps of providing prediction-based distributed navigation by the client comprises: sending a request for a set of routing information to the server by the client, wherein the request comprises sending a set of position coordinates; estimating an initial user position in response to receiving the client request and the set of position coordinates; calculating a comfort zone range wherein the comfort zone range comprises a minimum and a maximum displacement value, wherein the minimum displacement is defined by a minimum weighted function, an initial user speed, and an estimated elapsed time, and the maximum displacement of the comfort zone range is defined by a maximum weighted function, the initial user speed, and the estimated elapsed time; and generating a new set of routing information to a destination requested by the user using the calculated comfort zone range to estimate a route origin and accessing one or more databases to determine a set of routing directions from the estimated route origin to the destination.

2. The prediction-based distributed navigation method of claim 1 wherein each position coordinate comprises a corresponding time component.

3. The prediction-based distributed navigation method of claim 2, wherein the request for routing instructions further comprises an initial user velocity having a speed component and a heading component.

4. The prediction-based distributed navigation method of claim 3, wherein the initial user speed is derived from the initial user velocity.

5. The prediction-based distributed navigation method of claim 2, wherein an

initial user velocity comprising a speed component and a heading component is derived from the set of position coordinates and corresponding time components.

6. The prediction-based distributed navigation method of claim 2, wherein an initial user speed is derived from the set of position coordinates and associated time components.

7. The prediction-based distributed navigation method of claim 1 wherein the maximum and minimum weighted functions comprise one or more weighted factors from a set of one or more weighted factors comprising a speed limit factor, a road condition factor, a traffic condition factor, a traffic signal factor, a weather factor, and a visibility factor.

8. The prediction-based distributed navigation method of claim 7 wherein each weighted factor comprises a variable multiplier.

9. The prediction-based distributed navigation method of claim 1 wherein the step of estimating the initial user position comprises providing the client a list of candidate locations to receive user selection input.

10. The prediction-based distribution navigation method of claim 1 wherein the step of estimating the initial user position comprises using a global positioning system in conjunction with the set of position coordinates.

11. The prediction-based distribution navigation method of claim 1 wherein the client communicates with the server via a wireless network.

12. The prediction-based distribution navigation method of claim 1 wherein the step of the server generating the new set of routing information comprises the server accessing one or more databases via a network.

13. The prediction-based distribution navigation method of claim 1 wherein the one or more databases accessed comprises a map database, a weather database, or a traffic database.

14. A prediction-based navigation method in a distributed system comprising a client and a remote server, wherein the steps of providing prediction-based distributed navigation by the client comprises: a) sending a request for a set of routing information to the server by the client, wherein the request comprises sending a set of position coordinates; b) estimating an initial user position in response to receiving the client request and the set of position coordinates; c) determining if the initial user position is ambiguous; d) if the initial user position is not ambiguous, calculating a comfort zone range wherein the comfort zone range comprises a minimum and a maximum displacement value, wherein the minimum displacement is defined by a minimum weighted function, an initial user speed, and an estimated elapsed time, and the maximum displacement of the comfort zone range is defined by a maximum weighted function, the initial user speed, and the estimated elapsed time; and e) generating a new set of routing information to a destination requested by the user using the calculated comfort zone range to estimate a route origin and accessing one or more databases to determine a set of routing directions from the estimated route origin to the destination.

15. The prediction-based distributed navigation method of claim 14 wherein each position coordinate comprises a corresponding time component.

16. The prediction-based distributed navigation method of claim 15, wherein the request for routing instructions further comprises an initial user velocity having a speed component and a heading component.

17. The prediction-based distributed navigation method of claim 16, wherein the initial user speed is derived from the initial user velocity.

18. The prediction-based distributed navigation method of claim 15, wherein an initial user velocity is derived from the set of position coordinates and corresponding time components.

19. The prediction-based distributed navigation method of claim 15, wherein an initial user speed is derived from the set of position coordinates and associated time components.

20. The prediction-based distribution navigation method of claim 15, wherein the initial user position is ambiguous, further comprising the step of sending a list of candidate locations to the user for selection.

21. The prediction-based distribution navigation method of claim 20, wherein the user selects a location from the list of candidate locations.

22. The prediction-based distribution navigation method of claim 21, wherein the client periodically acquires a set of most recent user position coordinates and sends the position coordinates to the server.

23. The prediction-based distribution navigation method of claim 22, wherein the server updates the user initial position to a new value according to the user-selected location from the list of candidate locations and the most recently acquired position coordinates from the client.

24. The prediction-based distribution navigation method of claim 20, wherein the user does not select a location from the list of candidate locations within an allotted timeout period.

25. The prediction-based distribution navigation method of claim 24, further comprising the step of selecting a location from the candidate list as a default selection.

26. The prediction-based distribution navigation method of claim 25, wherein the client periodically acquires a set of most recent user position coordinates and sends the position coordinates to the server.

27. The prediction-based distribution navigation method of claim 26, wherein the server updates the user initial position to a new value according to the default location selection from the list of candidate locations and the most recently acquired position coordinates from the client.

28. A prediction-based distributed navigation system comprising: a client for sending a request for a set of routing information, wherein the request comprises sending a set of position coordinates; and a server for receiving the request from the client, calculating a comfort zone range wherein the comfort zone range comprises a minimum and a maximum displacement value, and generating a new set of routing information to a destination requested by the client using the calculated comfort zone range to estimate a route origin and accessing one or more databases to determine a set of routing directions from

the estimated route origin to the destination.

29. The prediction-based distributed navigation system of claim 28, further comprising a wireless carrier coupled to the client on a first end for receiving the request from the client and coupled to the server on a second end for relaying the request from the client to the server.

30. The prediction-based distributed navigation system of claim 29, further comprising one or more direct links coupled to the wireless carrier on a first end for receiving the request from the wireless carrier and coupled to the server on a second end for relaying the request from the wireless carrier to the server.

31. The prediction-based distributed navigation system of claim 29, further comprising a gateway coupled to the wireless carrier on a first end for receiving the request from the wireless carrier and coupled to the server on a second end for relaying the request from the wireless carrier to the server.

32. The prediction-based distributed navigation system of claim 31, further comprising a network coupled to the gateway on a first end for receiving the request from the gateway and coupled to the server on a second end for relaying the request from the gateway to the server.

33. A prediction-based distributed navigation system comprising: a server for receiving a navigation request, calculating a comfort zone range wherein the comfort zone range comprises a minimum and a maximum displacement value, generating a new set of routing information to a requested destination using the calculated comfort zone range to estimate a route origin and accessing one or more databases to determine a set of routing directions from the estimated route origin to the destination; and a client for receiving the set of routing directions from the server.

34. The prediction-based distributed navigation system of claim 33, further comprising one or more direct links coupled on a first end to the server for receiving the routing directions and coupled on a second end to the client for relaying the routing directions.

35. The prediction-based distributed navigation system of claim 34, further comprising a wireless carrier coupled on a first end to the direct links for receiving the routing directions and coupled on a second end to the client for relaying the routing directions.

36. The prediction-based distributed navigation system of claim 33, further comprising a network coupled on a first end to the server for receiving the routing directions and coupled on a second end to the client for relaying the routing directions.

37. The prediction-based distributed navigation system of claim 36, further comprising a gateway coupled on a first end to the network for receiving the routing directions and coupled on a second end to the client for relaying the routing directions.

38. The prediction-based distributed navigation system of claim 37, further comprising a wireless carrier coupled on a first end to the gateway for receiving the routing directions and coupled on a second end to the client for relaying the routing directions.

The Contents of Case 10730642_2b

Qnum	Query	DB Name	Thesaurus	Operator	Plural
Q1	6748318.pn. or 6567745.pn.	USPT	ASSIGNEE	OR	YES
Q2	Q1 and (pattern$ or recogni$)	USPT	ASSIGNEE	OR	YES
Q3	(pattern$ with data with recogni$)	PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD	ASSIGNEE	OR	YES
Q4	Q3 and (navigat$ with vehicle)	PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD	ASSIGNEE	OR	YES
Q5	Q4 and ((predict or forecast$) with (destinat$ or address$ or location$))	PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD	ASSIGNEE	OR	YES
Q6	Q5 and compar$	PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD	ASSIGNEE	OR	YES

Case Operation

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Search Results - Record(s) 1 through 10 of 10 returned.

☐ 1. Document ID: US 20050125148 A1

Using default format because multiple data bases are involved.

L6: Entry 1 of 10 File: PGPB Jun 9, 2005

PGPUB-DOCUMENT-NUMBER: 20050125148
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050125148 A1

TITLE: Prediction of vehicle operator destinations

PUBLICATION-DATE: June 9, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Van Buer, Darrel J.	Los Angeles	CA	US
Johnson, Richard A.	Rochester Hills	MI	US
Dao, Son K.	Northridge	CA	US
Simon, Andrea Marie	Walled Lake	MI	US

US-CL-CURRENT: 701/209; 340/995.19

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWMC | Draw De

☐ 2. Document ID: US 20040073361 A1

L6: Entry 2 of 10 File: PGPB Apr 15, 2004

PGPUB-DOCUMENT-NUMBER: 20040073361
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040073361 A1

TITLE: Enhanced mobile communication device, and transportation application thereof

PUBLICATION-DATE: April 15, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Tzamaloukas, Assimakis	San Jose	CA	US
Farmwald, P. Michael	Portola Valley	CA	US

US-CL-CURRENT: 701/210; 342/454, 701/209

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 3. Document ID: US 20020156572 A1

L6: Entry 3 of 10 File: PGPB Oct 24, 2002

PGPUB-DOCUMENT-NUMBER: 20020156572
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020156572 A1

TITLE: Method of compiling navigation route content

PUBLICATION-DATE: October 24, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Bullock, James Blake	Gilbert	AZ	US
Geranen, J. Scott	Phoenix	AZ	US

US-CL-CURRENT: 701/209; 340/988

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 4. Document ID: US 6807483 B1

L6: Entry 4 of 10 File: USPT Oct 19, 2004

US-PAT-NO: 6807483
DOCUMENT-IDENTIFIER: US 6807483 B1

TITLE: Method and system for prediction-based distributed navigation

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 5. Document ID: US 6745123 B1

L6: Entry 5 of 10 File: USPT Jun 1, 2004

US-PAT-NO: 6745123
DOCUMENT-IDENTIFIER: US 6745123 B1

TITLE: Method and device for transmitting navigation information from data processing center to an on-board navigation system

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 6. Document ID: US 6526349 B2

L6: Entry 6 of 10 File: USPT Feb 25, 2003

US-PAT-NO: 6526349
DOCUMENT-IDENTIFIER: US 6526349 B2

TITLE: Method of compiling navigation route content

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 7. Document ID: US 6233517 B1

L6: Entry 7 of 10 File: USPT May 15, 2001

US-PAT-NO: 6233517
DOCUMENT-IDENTIFIER: US 6233517 B1

TITLE: Predictive model for automated vehicle recommendation system

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 8. Document ID: US 6169515 B1

L6: Entry 8 of 10 File: USPT Jan 2, 2001

US-PAT-NO: 6169515
DOCUMENT-IDENTIFIER: US 6169515 B1

TITLE: Navigation information system

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 9. Document ID: US 5948040 A

L6: Entry 9 of 10 File: USPT Sep 7, 1999

US-PAT-NO: 5948040
DOCUMENT-IDENTIFIER: US 5948040 A

TITLE: Travel reservation information and planning system

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 10. Document ID: US 5508930 A

L6: Entry 10 of 10 File: USPT Apr 16, 1996

US-PAT-NO: 5508930
DOCUMENT-IDENTIFIER: US 5508930 A

TITLE: Vehicle navigation apparatus with new route replanning apparatus

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw D

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Terms	Documents
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